

WHAT IS CLAIMED IS:

1                   1.     A vehicle-installed exhaust gas analyzing apparatus  
2     comprising:  
3                   a nondispersive infrared (NDIR) type gas analyzer installed in the  
4     vehicle for continuously measuring concentration of hydrocarbon (HC) in an exhaust  
5     gas flowing through an exhaust pipe which is connected to an engine;  
6                   an exhaust gas flowmeter installed in the vehicle for continuously  
7     measuring flow rate of the exhaust gas flowing through the exhaust pipe; and  
8                   an operation processing device installed in the vehicle for processing  
9     outputs from the NDIR type gas analyzer and the exhaust gas flowmeter to  
10    continuously calculate mass of total hydrocarbon (THC) contained in the exhaust  
11    wherein THC concentration is obtained by multiplying a measurement result  
12    obtained by the NDIR type analyzer by a predetermined conversion factor.

1                   2.     The vehicle-installed exhaust gas analyzing apparatus  
2     according to claim 1, wherein a Pitot tube type flowmeter is used as said exhaust gas  
3     flowmeter, and said operation processing device is configured to continuously  
4     calculate said mass emission of THC using respective output signals of said Pitot  
5     tube type flowmeter and NDIR type analyzer as well as an exhaust gas temperature  
6     signal and exhaust gas pressure signals.

1                   3.     The vehicle-installed exhaust gas analyzing apparatus  
2     according to claim 2, wherein a device for removing influence of pressure change  
3     due to pulsation is provided between a differential manometer and a Pitot tube for  
4     static pressure detection and a Pitot tube for dynamic pressure detection of the Pitot  
5     tube type flowmeter.

1                   4.     The vehicle-installed exhaust gas analyzing apparatus  
2     according to claim 2, wherein the Pitot tube type flowmeter is provided in a tailpipe

3 attachment which is connectable/detachable to/from the exhaust pipe which is  
4 connected to the engine.

1                   5. The vehicle-installed exhaust gas analyzing apparatus  
2 according to claim 1, wherein a differential pressure type flowmeter which is  
3 adapted to detect a differential pressure in the gas flowing through the exhaust pipe  
4 by means of a differential manometer and subject a differential pressure signal  
5 outputted from the differential manometer to an arithmetic process, thereby  
6 obtaining flow rate of the gas is used as the exhaust gas flowmeter, the differential  
7 pressure signal is sampled every certain time, a predetermined number of data is  
8 stored, and when subjecting these sampled plural data to moving-average, the  
9 number of data to be subjected to the moving-average is changed in accordance with  
10 the flow rate.

1                   6. The vehicle-installed exhaust gas analyzing apparatus  
2 according to claim 5, wherein it defines the data obtained by converting an  
3 indicative value of the differential manometer into a pressure unit as  $x$  and an  
4 arbitrary number as  $Y$ , and data of the number corresponding to  $[Y/(\sum x + 1)]$  ([: Gauss symbol) is moving-averaged.

1                   7. The vehicle-installed exhaust gas analyzing apparatus  
2 according to claim 5, wherein it defines the data obtained by converting an  
3 indicative value of the differential manometer into a pressure unit as  $x$ , an arbitrary  
4 number as  $Y$ , an appropriate integer as  $\alpha$ , and an appropriate constant as  $C$ , and data  
5 of the number corresponding to  $[Y/(\sum x)^\alpha + C]$  ([: Gauss symbol) is moving-  
6 averaged, and the number of data is automatically adjusted to a suitable value by a  
7 full scale value of the differential manometer and a flow rate of a predetermined  
8 time.